

# Embrithopoda

**Embrithopoda** ("heavy-footed") is an order of extinct mammals known from Asia, Africa and eastern Europe. Most of the embrithopod genera are known exclusively from jaws and teeth dated from the late Paleocene to the late Eocene, but the order is best known from its terminal member, the elephantine *Arsinoitherium*.<sup>[3]</sup>

## Contents

**Description**

**Classification**

**Notes**

**References**

## Description

While embrithopods bore a superficial resemblance to rhinoceroses, their horns had bony cores covered in keratinized skin and were not made of hair. Not all embrithopods possessed horns, either. Despite their appearance, they have been regarded as related to elephants, not perissodactyls.<sup>[4]</sup>

As tethytheres,<sup>[5]</sup> the Embrithopoda have been believed to be part of the clade Afrotheria. However, a study of the basal arsinotheriid, *Palaeoamasia*, suggests that embrithopods are not tethytheres or even paenungulates, and that they need to be better sampled in an analysis of eutherian relationships to clarify if they are even afrotherians.<sup>[6]</sup> It is also not clear if embrithopods originated in Africa or Eurasia.<sup>[6]</sup> However, recent findings demonstrate an African origin for embrithopods and furthermore a relationship with other paenungulates, albeit having diverged earlier than previously thought.<sup>[7]</sup>

Fossils of embrithopods, such as *Arsinoitherium*, have been found in Egypt, Morocco, Mongolia, Turkey, Romania, Namibia<sup>[8]</sup> and Tunisia.<sup>[9]</sup> Until the 1970s, only *Arsinoitherium* itself was known, appearing isolated in the fossil record.<sup>[4]</sup>

## Classification

McKenna & Manning 1977 and McKenna & Bell 1997 considered *Phenacolophus* from Mongolia a primitive embrithopod, although this attribution was challenged by several other authors.<sup>[10]</sup> A 2016 cladistic study found *Phenacolophus* as a stem-perissodactyl and the embrithopods at the base of Altungulata.<sup>[11]</sup><sup>[6]</sup> More recently, an afrothere identity has been vindicated, albeit more basal than previously assumed.<sup>[12]</sup>

### Embrithopoda

**Temporal range: Eocene -**

**Oligocene, 56–28 Ma**<sup>[1]</sup>

**PreЄ** **Є** **O** **S** **D** **C** **P** **T** **J** **K** **PgN** —



*Arsinoitherium zitteli*<sup>[2]</sup>

### Scientific classification

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

*Clade*: Paenungulata

Order: †Embrithopoda  
Andrews 1906

### Families

- †*Stylolophus*
- †Arsinoitheriidae
- †Palaeoamasiidae

Order **Embrithopoda** Andrews 1906 sensu Prothero & Schoch 1989 (=Barypoda Andrews 1904)<sup>[13]</sup>

- Genus †*Stylolophus* Gheerbrant *et al*, 2018
- Family †Arsinoitheriidae Andrews 1904
  - Genus †*Namatherium* Pickford *et al.*, 2008<sup>[8]</sup>
  - Genus †*Arsinoitherium* Beadnell 1902
- Family †Palaeoamasiidae Şen & Heintz 1979
  - Genus †*Hypsamasia* Maas, Thewissen & Kappelman 1998
  - Genus †*Palaeoamasia* Ozansoy 1966
  - Genus †*Crivadiatherium* Radulesco, Iliesco & Iliesco 1976

## Notes

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